Product Brief

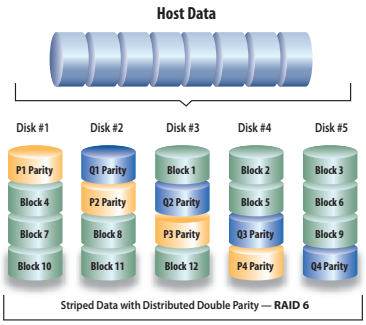
3ware® 9650SE

High-Performance PCI Express to Serial ATA II RAID Controller

LSI 3ware 9650SE SATA II hardware RAID controllers deliver industry-leading RAID 6 and RAID 5 performance, robust fault tolerance, and multi-terabyte capacities. A PCI Express host interface, Multi-lane™ connectivity, StorSwitch™ architecture, and sophisticated SATA II features drive this unrivaled performance.

KEY FEATURES

- Simultaneous P+Q parity generation to maximize RAID 6 performance
- Over 700MB/s RAID 6 reads and over 600MB/s RAID 6 writes
- StorSwitch™ 8th generation non-blocking switch fabric for maximum controller throughput
- StreamFusion optimizes I/O accesses to maximize application performance under multiple stream loads
- StorSave BBU with write journaling optimizes data protection and performance
- Award winning Multi-lane combines four SATA ports into a single locked connection for improved I/O subsystem reliability and airflow
- Supports advanced SATA II features including 3Gb/s and NCQ
- 2, 4, 8-port low profile configurations
- 12, 16, and 24-port full height configurations
- RAID levels 0, 1, 5, 6, 10, 50, Single Disk, and JBOD



RAID 6: Two sets of parity data, P + Q, are striped across disks. RAID 6 safeguards against data loss during rebuild mode by allowing up to two consecutive drive failures for maximum fault tolerance.

The Best Keeps Getting Better

The 3ware 9650SE PCI Express to SATA II RAID controller pushes LSI established leadership in RAID controller performance to new heights. While 3ware controllers continue to lead the market in RAID 5 performance, the 3ware 9650SE outshines the competition as the new standard bearer for RAID 6 performance, delivering over 700MB/s RAID 6 reads and 600MB/s RAID 6 writes.

The 3ware 9650SE offers the most comprehensive line of PCI Express controllers, available in both low profile and full height footprints with 2, 4, 8, 12, 16, and 24-port configurations. All 4-port and above models feature 3ware's award-winning Multi-lane connectivity. The 9650SE supports RAID levels 0, 1, 5, 6, 10, 50, Single Disk, and JBOD.

Red Hot RAID 6

RAID 6 eliminates the risk of data loss if a second hard disk drive fails while the RAID array is rebuilding. In a 3ware RAID 6 system, two sets of parity are simultaneously calculated, written, and rotated across all the drives. This second parity calculation enables the array to survive up to two drive failures without losing data, significantly improving fault tolerance. The 3ware parallel XOR RAID 6 parity generation algorithm maximizes RAID 6 throughput, so that RAID 6 enabled 9650SE controllers deliver unequaled RAID 6 performance.

Get Connected via the Multi-lane Expressway

3ware's award winning Multi-lane high bandwidth SATA connection system is fast, secure, simple, and clutter free. Multi-lane combines four SATA ports into a single locked connection. Four lanes of high speed SATA traffic travel through just one cable, significantly reducing the number of cables needed to connect controllers, backplanes, and standard SATA drives. A 16-port Multi-lane controller needs only four cables, compared to sixteen cables with discrete solutions, for dramatically better reliability, airflow and convenience.

Enterprise-class RAID Storage

The 9650SE's advanced RAID features, SATA II connectivity, and powerful 3ware performance architecture make it the ideal controller for vertical applications that require the highest levels of sustained write and read performance including NAS storage, web servers, cluster servers, supercomputing, near-line backup and archival, security systems, pro audio and video applications, and other demanding storage applications that need high-bandwidth, high-capacity sequential performance.

LSI 3ware 9650SE

3ware 9650SE Specifications

3ware 9650SE Features

- 8th-generation StorSwitch™ non-blocking switched architecture
- On-board I/O RISC processor and RAID offload provides true hardware RAID
  - — SCSI device driver model to take advantage of the benefits of SCSI using inexpensive Serial ATA drives
- Bootable array support for greater fault tolerance of your OS
- Variable stripe size for performance tuning by application
- 64-bit LBA support (greater than 2TB volume)
- ATA pass-through mode support
- Up to 512MB DDR2 533 memory with ECC protection (see table below)
- 32 pooled DMA channels
- Complete configuration management suite
  - — 3ware BIOS Manager 2 (3BM2) – easy to use BIOS configuration tool
  - — 3ware Disk Manager 2 (®2) – browser-based management tool
  - — Command Line Interface (CLI) – scriptable configuration tool
- SNMP support
- SMTP support for email/pager notification
- ATA/6 and Out of band (OOB) staggered drive spin-up support
- Auto carving allows LUNs > 2TB to be divided into multiple units for legacy operating systems limited to 2TB max. per LUN
- Battery Backup Unit (BBU) support
- Multiple logical unit sizes and RAID levels on one card
- Multiple card support within a system for large storage requirements
- Hot-swap and hot-spare support for data availability
- Dynamic sector repair for robust data protection
- S.M.A.R.T. disk drive monitoring for reliability
- Emergency Flash Recovery protects against failed firmware upgrade
- Drive activity LED support
- Online Capacity Expansion and RAID Level Migration
- Write journaling for improved performance and data protection against accidental drive removal
- Drive insertion and removal notification
- Array/Drive Status and drive identification LED support (requires 3ware Chassis Control Unit-enabled backplane)
- Chassis Control Unit for enclosure management via I2C
- RoHS compliant

Operating System Support

- Microsoft® Windows® 2003/XP/2000, Mac OSX, Red Hat Linux, SuSE Linux, Fedora Linux, 2.4 Linux kernel, 2.6 Linux kernel, FreeBSD; 32/64-bit driver support for Windows, Linux and FreeBSD. For complete OS listing, go to: www.3ware.com/support/OS-support

3ware 9650SE Specifications

- Low profile form factor (2, 4, 8-port configurations)
- Full-height form factor (12, 16, 24-port configurations)
- PCI Express x1, x4, x8 configurations, PCI Express 1.1 compliant
- Serial ATA 2.6 Specification support
- BIOS PnP (plug and play) and BBS (BIOS boot specification) support
- Operating Temperature
  Without BBU: 0˚C to 50˚C
  With BBU: 10˚C to 40˚C
- Power Requirements: 18W maximum
- Dimensions
  9650SE-2LP: 7.30″L x 2.73″H (18.54cm L x 6.93cm H)
  9650SE-4LPML: 7.30″L x 2.73″H (18.54cm L x 6.93cm H)
  9650SE-8LPML: 7.30″L x 2.73″H (18.54cm L x 6.93cm H)
  9650SE-12ML: 6.90″L x 4.57″H (17.53cm L x 11.61cm H)
  9650SE-16ML: 6.90″L x 4.57″H (17.53cm L x 11.61cm H)
  9650SE-24M8: 7.23″L x 4.19″H (18.37cm L x 10.66cm H)

Service and Support

- 3-year warranty
- Support via the web at www.3ware.com/support
- For latest motherboard and hard drive compatibility listing go to: www.3ware.com/products//sys_compatibility.asp

Accessories

- BBU-MODULE-03 Battery Backup Unit
- BATT-SPARE-02 Replacement battery for BBU-MODULE-03
- RDC-400-SATA SATA internal drive cage
- CBL-SFF8087-05M (0.5m Multi-lane internal cable)
- CBL-SFF8087OCF-05M (0.5m Multi-lane forward breakout cable)
- CBL-SFF8087OCF-10M (1m Multi-lane forward breakout cable)
- CBL-SFF8087IB-05M (0.5m bi-directional Multi-lane hybrid cable)

Applications for 3ware Controllers

Servers

Security/ Surveillance

Video Editing

Super Computing

NAS

Video On-Demand

Pro Audio

Disk-to-Disk Backup

3WARE 9650SE SERIES SELECTION GUIDE

	9650SE-2LP	9650SE-4LPML	9650SE-8LPML	9650SE-12ML	9650SE-16ML	9650SE-24M8
Form Factor	Low profile	Low profile	Low profile	Full height	Full height	Full height
Port Count	2	4	8	12	16	24
PCI Express Lanes	1	4	4	8	8	8
RAID Levels	0, 1, Single Disk, JBOD	0, 1, 5, 10, Single Disk, JBOD	0, 1, 5, 6, 10, 50, Single Disk, JBOD	0, 1, 5, 6, 10, 50, Single Disk, JBOD	0, 1, 5, 6, 10, 50, Single Disk, JBOD	0, 1, 5, 6, 10, 50, Single Disk, JBOD
Onboard Memory	128MB DDR2 533	256MB DDR2 533	256MB DDR2 533	256MB DDR2 533	256MB DDR2 533	512MB DDR2 533
Connector Type	Discrete	Muti-lane	Muti-lane	Muti-lane	Muti-lane	Muti-lane
BBU Support	No	Yes	Yes	Yes	Yes	Yes

For more information and sales office locations, please visit the LSI web sites at:
lsi.com **3ware.com**

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July 2009